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NEW TAXA OF AND NOMENCLATURAL CHANGES IN *ARISTIDA* L. (POACEAE) IN AUSTRALIA

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Summary

Thirteen new species, namely *Aristida annua, A. arida, A. australis, A. blakei, A. borealis, A. burbidgeae, A. burraensis, A. granitica, A. kimberleyensis, A. latzii, A. lazaridis, A. lignosa* and *A. vickeryae* are described. Diagnoses are given for five new varieties, namely *A. benthamii* Henrard var. *spinulifera, A. biglandulosa* J. Black var. *laevis, A. browniana* Henrard var. *latifolia, A. calycina* R.Br. var. *filifolia,* and *A. utilis* F. M. Bailey var. *grandiflora,* and one new subspecies, *A. macroclada* Henrard subsp. *queenslandica.* A new combination *A. queenslandica* Henrard var. *dissimilis* is made for *A. dissimilis* S. T. Blake. *A. praealta* (Domin) Henrard (including *A. armata* Henrard) is re-established as *A. calycina* var. *praealta* Domin and *A. echinata* Henrard and *A. personata* Henrard are placed in synonymy with *A. ramosa* R.Br. var. *scaberula* Henrard and *A. ramosa* var. *speciosa* Henrard. A key to the taxa of *Aristida* in Australia is given.

The following new Australian species of *Aristida* have been recognised during my revisional work on the genus. Acronyms for herbaria are those listed in Index Herbariorum I, ed. 7, (1981).

Aristida annua B. K. Simon, species nova affinis *A. leichhardtianae* Domin sed annua, glumis subequalis et panicula effusiore differt. **Typus:** *Skerman* (BRI sub BRI 011772, holotypus).

Caespitose annual to 50 cm tall. Culms smooth, glabrous, terete, branched, to 3–noded, nodes mauve. Leaf sheaths smooth, glabrous. Ligule a fringe of hairs to 1 mm long. Leaf blades smooth and glabrous on the lower surface, thinly pubescent on the upper, flat and wavy to involute, to 15 cm × 1·5 mm. Inflorescence an open panicle with the spikelets loosely clustered at the branch apices, 10–20 × 5–12 cm. Glumes scaberulous, mauve, 1–nerved, terminating in an awn 1–1·5 mm long, the lower 6·5–7·5 mm long, the upper 7–8·5 mm long. Lemma 5·5–6·5 mm long, scabrous at the apex, convolute, pallid to light mauve, sometimes speckled with mauve patches; callus *ca* 0·5 mm long with hairs to 1 mm long. Awns subequal, 8–12 mm long, scaberulous, very slender. **Fig. 1A.**

Queensland. LEICHHARDT DISTRICT: Gindie, Mar 1958, *Skerman* in BRI 011772 (BRI), June 1977, *Peart* 399 (BRI); 8 miles [13 km] S of Springsure, May 1971, *L. Smith* in BRI 121367 (BRI).

This appears to be a very localised annual species restricted to the black clay soils of central Queensland.

Aristida arida B. K. Simon, species nova affinis *A. nitidulae* (Henrard) S. T. Blake ex J. Black sed glumis inaequalibus et affinis *A. strigosae* (Henrard) S. T. Blake ex J. Black sed lemmate tuberculato non scabroso differt. **Typus:** *Lazarides* 5725 (BRI sub BRI 021231, holotypus; isotypi CANB, MEL, NSW, NT, PERTH).

Caespitose perennial to 80 cm tall. Culms smooth, glabrous, terete, to 4–noded, branched at the lower nodes, nodes dull yellow. Leaf sheaths smooth, glabrous. Ligule a fringe of hairs to 0·3 mm long. Leaf blades scaberulous especially on the upper surface, involute with a pointed apex, to 20 cm × 2 mm. Inflorescence a spicate panicle 11–40 × 1–3 cm. Glumes smooth, the lower with a scabrous keel, 1–nerved, terminating in an awn *ca* 1 mm long, the lower 6–11 mm long, the upper 8–13 mm long. Lemma 7–11 mm long, tuberculate towards the apex, convolute, pallid to pale mauve; callus *ca* 0·5 mm long with hairs to 1·5 mm long. Awns subequal 11–24 mm long, scaberulous, flattened. **Fig. 1B.**

SPECIMENS EXAMINED: 29. Northern Territory. CENTRAL NORTH: Alcoota Station, Jun 1976, *Latz* 6514 (BRI, CANB, NSW, NT); 1 mile [1·6 km] S of Alcoota Station, Sep 1956, *Lazarides* 5984 (AD, BRI, CANB); 17miles [27 km] E of Harts Range Police Depot, May 1955, *Lazarides* 5206 (AD, BRI, CANB, MEL, NSW, NT, PERTH); Mount Riddoch area, May 1974, *Beauglehole* 44572 (BRI, NT); Mt Liebig, Jun 1974, *Carr* 2320 & *Beauglehole* (BRI, NSW, NT); 6·5 km NNW of Mt Zeil, Jul 1968, *Beauglehole* 27171 (BRI, CANB, NT). CENTRAL SOUTH: 9·5 miles [15 km] NNW of Alice Springs, Jun 1958, *Lazarides* 5183 (AD, BRI, CANB, MEL, NSW, NT, PERTH); 9·2 miles [15 km] N of Alice Springs, Feb 1971, *Nelson* 2078 (BRI, CANB, NSW, NT); Bitter Springs Gorge, Nov 1954, *Chippendale* in NT 454 (ADW, BRI, CANB, MEL, NT, PERTH); 20·5 miles [33 km] SE of Alice Springs, Aug 1956, *Lazarides* 5725 (BRI, CANB, MEL, NSW, NT, PERTH);

Gosse Bluff, Jun 1974, *Carr* 2214 & *Beauglehole* (BRI, CANB, NT); 2 miles [3 km] NE of Hermannsburg Mission, May 1955, *Lazarides* 5312 (AD, BRI, CANB, NT); Finke River, in 1880, *Kempe* 5 (BRI, MEL); 37 miles [59 km] SE of Alice Springs, Santa Teresa road, Nov 1970, *Nelson* 2035 (BRI, CANB, NSW, NT); Palm Valley, Jul 1965, *Beauglehole* 10361 (BRI, NSW, NT); George Gill Range, Jul 1968, *Beauglehole* 26344 (BRI, NT). **South Australia:** FLINDERS RANGES: Balcanoona Station, Apr 1955, *Kerr* in ADW 12007 (ADW); Oraparima National Park, Oct 1971, *Symon* 7571 (AD, ADW, CANB); Arkaroola, May 1979, *Jacobs* 3627 (BRI, NSW).

The spikelet morphology exhibited by this species is intermediate between that of *A. nitidula* and *A. strigosa* and it may possibly be a hybrid between these species. The tubercles on the lemmas of *A. arida* are similar to those found in *A. nitidula* but in the latter species the glumes are more or less equal. The scabrid hairs on the lemmas of *A. strigosa* are longer and thinner than the tubercles on the lemmas of *A. arida*.

Aristida australis B. K. Simon, species nova affinis *A. strigosae* (Henrard) S. T. Blake ex J. Black et *A. aridae* B. K. Simon sed lemmate laevi vel scaberulo sparsim differt. **Typus:** *T. Smith* (AD sub AD 96737133, holotypus; isotypus BRI sub BRI 279005).

Caespitose perennial to 65 cm tall. Culms smooth, glabrous, glaucous, terete, to 4–noded, many branched at the lower nodes, nodes dark mauve. Leaf sheaths smooth, glabrous. Ligule a fringe of hairs to 0·2 mm long. Leaf blades more or less smooth on both surface, flattened and flexuous, to 10 cm × 3 mm. Inflorescence a loosely contracted panicle 8–24 × 0·2–0·3 cm. Glumes smooth, the lower with a scabrous keel, terminating in an awn *ca* 1 mm long, the lower *ca* 10 mm long, 1–3 nerved, the upper *ca* 13 mm long, 1–nerved. Lemma 9–10 mm long, smooth, convolute, pallid with mauve patches to uniformly mauve; callus *ca* 1 mm long with hairs to 1·8 mm long. Awns subequal, 14–17 mm long, scaberulous, slender. **Fig. 1C.**

South Australia: LAKE EYRE BASIN: 1887, *Newland* 159 (MEL). FLINDERS RANGES: Between Paralana and Wooltana, Aug 1968, *Whibley* 2619 (A, AD); 26 km S of Balcanoona, Sep 1973, *Whibley* 4106 (AD, CANB). SOUTHERN LOFTY: Adelaide Plains, near Queenstown, May 1967, *T. Smith* in AD 96737133 (AD, BRI); Royal Park, Feb 1968, *T. Smith* 1548 (AD).

The lemmas of the five specimens of this species collected thus far are completely smooth or very sparsely scaberulous. This feature distinguishes the species from a group of related species with tuberculate lemmas (*A. nitidula, A. arida* and *A. strigosa*). Other species with smooth to scaberulous lemmas related to *A. australis* are *A. latzii* and *A. burraensis,* while *A. burbidgeae* has the lemma smooth except for a marginal band of spines.

Aristida blakei B. K. Simon, species nova affinis *A. aridae* B. K. Simon, *A. nitidulae*(Henrard) S. T. Blake ex J. Black et *A. platychaetae* S. T. Blake sed panicula effusiore, basibus aristarum augustioribus, et affinis *A. muricatae* Henrard sed lemmate convoluta differt. **Typus:** *Blake* 11000 (BRI sub BRI 254115, holotypus; isotypi AD, CANB, K, L, MEL, MO, NSW, NT, PERTH, PRE).

Caespitose perennial to 90 cm tall. Culms smooth, glabrous, terete, usually branched at the lower nodes, to 5–noded, nodes brown to purple. Leaf sheaths smooth, glabrous. Ligule a fringe of hairs to 0·5 mm long and a few marginal to 1 mm long. Leaf blades scaberulous, only slightly so on the lower surface and distinctly so on the upper surface, flexuous, involute, to 20 cm × 1·5 mm. Inflorescence a narrow open panicle 10–34 × 4·5–7·5 cm. Glumes smooth, slightly scabrous on the keels, 1–nerved, acuminatae or with a short awn to 1 mm long, the lower 8–14 mm long, the upper 9–15 mm long. Lemma 8–12 mm long, convolute, distinctly tuberculate in the upper half, pallid to pale mauve in colour, callus 0·8–1·0 mm long with hairs to 1·5 mm long. Awns subequal, 16–28 mm long, scaberulous, slender. **Fig. 1D.**

Queensland. BURKE DISTRICT: 9 miles [14 km] N of Jardine Valley Homestead, Apr 1979, *Lazarides* 4531 (CANB). NORTH KENNEDY DISTRICT: Pentland, Jun 1934, *Blake* 6167 (AD, BRI, CANB, K, MEL, NSW, NT, PERTH). LEICHHARDT DISTRICT: Guluguba, Mar 1942, *Crook* in BRI 178972 (BRI). GREGORY NORTH DISTRICT: Warenda Station, Jan 1937, *Everist & Smith* 119 (BRI); Mayne River between Tonkoro and Winton, May 1979, *Purdie* 1507 (BRI). WARREGO DISTRICT: Morven, Apr 1936, *Blake* 1100 (AD, BRI, CANB, K, L, MEL, MO, NSW, NT, PERTH, PRE); 6 km NW of Gowrie, Jul 1977, *Purdie* 590 E (BRI). MARANOA DISTRICT: "Chelmer", 58 km SE of St George, Jan 1979, *Gordon* 16 (BRI). DARLING DOWNS DISTRICT: near Gurulmundi, Nov 1930, *Hubbard* 5057 (BRI, K). **New South Wales:** NORTH WESTERN PLAINS: Boggabilla, Jan 1935, *Winders* in BRI 179005 (BRI). NORTH FAR WESTERN PLAINS: Milparinka, May 1977, *Jacobs* 3068 (AD, BRI, NSW); in 1887, *King* in MEL 94586 (MEL). **Without Locality.** *Deane* NSW 144380 (NSW).

This species occurs on both clay and sandy soils over a wide range of Queensland and northern New South Wales, although it has not often been collected. It differs from *A. arida, A. nitidula* and *A. platychaeta* by its more open inflorescence and by the awns being more slender at their bases and from *A. muricata* Henrard by the possession of convolute lemmas. It is named in honour of the late Dr S. T. Blake, well-known for his work on Australian grasses, who collected the type specimen.

Aristida borealis B. K. Simon, species nova afinis *A. calycinae* R.Br. sed glumis longioribus et glumis infernis trinervibus et affinis *A. lazaridi* B. K. Simon sed marginibus lemmatis non protrusis a latere, panicula contractiore differt. **Typus:** *Simon* 3450 (BRI, sub BRI 254712, holotypus; isotypi CANB, K, NT).

Caespitose perennial to 1 m tall. Culms smooth, glabrous, glaucous, terete, branched at the base, to 3–noded, nodes mauve. Leaf sheaths smooth, glabrous. Ligule a fringe of short hairs to 0·2 mm long. Leaf blades flexuous and involute above to flat and curling up at maturity below, very slightly scaberulous on the upper surface, to 20 cm × 2 mm. Inflorescence a contracted to open panicle 16–44 × 0·5–4 cm. Glumes subequal to slightly inverted, glabrous, smooth, acuminate to shortly awned. Lower glume 3–4–nerved, 10·5–15 mm long; upper glume 1–nerved, 10·5–16 mm long. Lemma 9·5–12 mm long, involute, smooth, pallid with a few scattered mauve patches; callus *ca* 1 mm long with hairs to 1·5 mm long. Awns slender, scaberulous, the central longer than the laterals by 4–9 mm, the central 24–32 mm, the laterals 21–26 mm. **Fig. 1E.**

Queensland. Cook District: Almaden, Aug 1936, *Blake* 12430 (BRI, CANB, K, L); McLeod River crossing, Mar 1978, *Anning* 267 (BRI, QRS); Lappa Junction, Jan 1931, *Hubbard* in BRI 243833 (BRI, K); Desailly Range, Jan 1971, *Hyland* 5157 (BRI, QRS); Forest Home Station, Mar 1931, *Brass* 1850 (BRI). North Kennedy District: Lolworth Creek, 30 km NW of Charters Towers, Apr 1978, *Simon* 3450 (BRI, CANB, K, NT).

This species occurs in north Queensland only on sandy soils and ridges. In this it differs from *A. lazaridis* which is restricted to cracking clays and loams. Furthermore the inflorescence is not as open as in *A. lazaridis* and the lemmas are strictly involute. It differs from *A. calycina* by having longer glumes of which the lower is 3–4–nerved.

Aristida burbidgeae B. K. Simon, species nova affinis *A. nitidulae* (Henrard) S. T. Blake ex J. Black et *A. latzii* B. K. Simon sed lemmate laevi praeter seriem spinarum ad marginem differt. **Typus:** *Burbidge* 1111 (PERTH, holotypus et isotypus).

A. pruinosa Domin var. *tenuis* Gardner, Fl. W. Aust. 1(1): 168 (1952), *nomen nud.*

Caespitose perennial to 45 cm tall. Culms smooth, glabrous, branched at the base, to 3–noded, nodes pallid. Leaf sheaths smooth, glabrous. Ligule a fringe of hairs to 0·4 mm long. Leaf blades flexuous, involute, to 10 cm × 1 mm. Inflorescence a spicate panicle, 8–17 × 0·5–1 cm. Glumes smooth to very lightly scaberulous, acute, 1–nerved, the lower *ca* 0·8 mm long, the upper *ca* 0·9 mm long. Lemma *ca* 8 mm long, convolute, uniformly pallid or pallid with mauve patches, with a band of spines 2–4 rows wide running the length of the lemma directly adjacent to the overlapping margin; callus *ca* 0·6 mm long with hairs to 1·5 mm long. Awns subequal, the central to 13 mm long, the laterals to 11 mm long, slender. **Fig. 1F.**

Western Australia. Ashburton District: Barlee Range, Henry River, Aug 1961, *Royce* 6604 (PERTH). Fortescue District: Kitty's Gap, E from Eginbah, Jun 1941, *Burbridge* 980 (PERTH); Cooya Pooya, Mar 1976, *R. Black* (CANB, PERTH); Mount Edgar, SE from Marble Bar, Jun 1941, *Burbidge* 1111 (PERTH).

This species is very similar to *A. latzii* and occupies similar rocky habitats, although is found only in the Hamersley and Barlee Ranges of Western Australia. It differs morphologically from *A. latzii* by the distinctive marginal band of spines running the length of the otherwise smooth lemma. It is named in honour of the late Dr Nancy Burbidge, the well known Australian botanist, who collected the type and another of the cited specimens.

Aristida burraensis B. K. Simon, species nova affinis *A. nitidulae* (Henrard) S. T. Blake ex J. Black sed lemmate laevi, affinis *A. latzii* B. K. Simon sed aristis non complanatis, lemmate breviore et affinis *A. benthamii* Henrard sed lemmate convoluto differt. **Typus:** *Chapman* 1314 (BRI sub BRI 238092, holotypus; isotypi, CANB, K, L).

Caespitose perennial to 80 cm tall. Culms scaberulous, glabrous, terete, solitary, to 3–noded, nodes brown. Leaf sheaths slightly scaberulous. Ligule a fringe of hairs to 0·4 mm long. Leaf blades involute, rigid with a sharply pointed apex, distinctly scaberulous, to 14 cm × 1 mm. Leaves mostly arranged at the base of the culm. Inflorescence a loosely interrupted spicate panicle, 16–28 × 2 cm. Glumes sub-equal 6·5–8 mm long, 1–nerved, acute, the lower scaberulous with a scabrous keel, the upper ± smooth. Lemma smooth, convolute, *ca* 6 mm long, pale mauve with darker mauve patches; callus *ca* 0·6 mm long with hairs to 1·5 mm long. Awns sub-equal, to 10 mm long, slender and scaberulous. **Fig. 1G.**

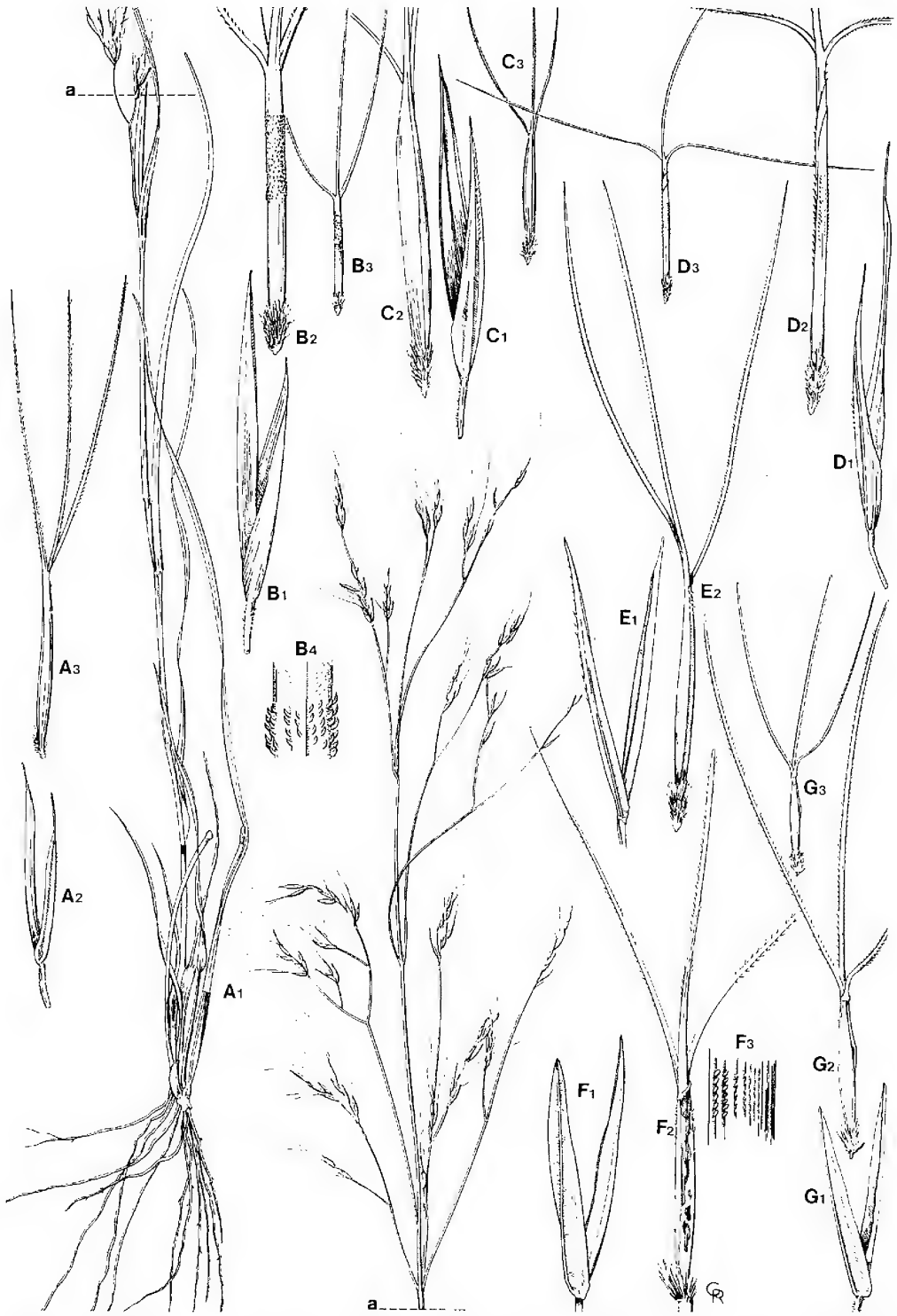

Fig. 1. A. *Aristida annua*. A1, habit (× ⅔); A2, glumes (× 4); A3, lemma (× 4). B. *Aristida arida*. B1, glumes (× 4); B2, lemma (× 4); B3, lemma (× 2); B4, tubercles on lemma (× 16). C. *Aristida australis*. C1, glumes (× 4); C2, lemma (× 4); C3, lemma (× 2). D. *Aristida blakei*. D1, glumes (× 4); D2, lemma (× 4); D3, lemma (× 2). E. *Aristida borealis*. E1, glumes (× 4); E2, lemma (× 4); F. *Aristida burbidgeae*. F1, glumes (× 4); F2, lemma (× 4); F3, lemma margin showing spines (× 16). G. *Aristida burraensis*. G1, glumes (× 4); lemma (× 4); lemma (× 2). All drawn from type specimens.

Queensland. North Kennedy District: Burra Range, Jul 1975, *Chapman* 1314 (BRI, CANB, K, L).

This species is known only from the type specimen. It was originally thought of as a form of *A. nitidula* with a smooth lemma but because of the diagnostic importance I place in this attribute, I have treated it as being distinct. Also its geographic remoteness from *A. nitidula* together with a spikelet possession more slender awns than that species warrants its treatment as a new species. It differs from *A. latzii* by having a shorter lemma and more slender awns and it has a superficial resemblance to *A. benthamii* but in that species the lemma has involute margins.

Aristida granitica B. K. Simon, species nova affinis *A. hirtae* Domin et *A. superpendenti* Domin sed aristis lateralibus tenuioribus multis et dimidi longitudinem brevioribus quam arista centrali differt. **Typus:** *Simon* 3423 (BRI sub BRI 257519, holotypus).

Caespitose perennial to 75 cm tall. Culms smooth, glabrous, slightly laterally compressed, occasionally branched, largely concealed at the base by leaf sheaths which are smooth and glabrous. Ligule a fringe of hairs to 0·3 mm long and auricles with a cluster of longer hairs to 2 mm long. Leaf blades involute, flexuous, smooth, to 20 cm × 1·5 mm. Inflorescence a contracted panicle, to 30 × 2 cm. Glumes unequal, the lower 7–8 mm long and 3–nerved, the upper 12–13 mm long and 1–nerved, smooth, very slightly scaberulous on the keels, drawn out towards the apex although abruptly contracted at the tip. Lemma 8–9 mm long, slightly scabrous in the upper portion, pallid; callus *ca* 0·6 mm long with hairs to 1·5 mm long. Articulation indistinct. Colum twisted, 12–14 mm long. Awns very unequal, the central up to 22 mm long and thicker than the laterals which are *ca* 11 mm long, slightly scabrous and coiled round each other at the base. **Fig. 2A.**

Queensland. North Kennedy District: Mt Pring, 10 km W of Bowen, Apr 1978, *Simon* 3423 (BRI).

This is a very distinctive species so far found only in the granite sand of the foothills of Mt Pring, east of Bowen. It belongs to the section *Arthratherum* although the articulation of the lemma is rather indistinct as in *A. hirta* and *A. superpendens,* but the lateral awns are much thinner and shorter than the central awn compared to those of these species.

Aristida kimberleyensis B. K. Simon, species nova affinis *A. sciuroidi* Domin sed lemmatibus convolutis, sine pseudoarticulo, glumis inferis trinervis et affinis *A. schultzii* Mez sed sine columna differt. **Typus:** *Lazarides* 8660 (CANB sub CANB 283118, holotypus).

Caespitose sprawling perennial to 1 m tall. Culms smooth, glabrous, terete, *ca* 6–noded with 2–3 branches from each node. Leaf sheaths smooth, glabrous. Ligule a fringe of hairs to 0·3 mm long. Leaf blades smooth and glabrous on the lower surface, scaberulous on the upper, flat to involute, to 20 cm × 2 mm. Inflorescence an interrupted spicate panicle 20–40 × 1–2 cm. Glumes smooth, terminating in an awn 1–2 mm long, the lower 3–nerved, 12–16 mm long, the upper 1–nerved, 10–12·5 mm long. Lemma 9–14 mm long, smooth to slightly scabrous at the apex, convolute, pallid; callus *ca* 0·6 mm long with hairs to 0·5 mm long. Awns 20–25 mm long, the side awns *ca* 2 mm shorter than the central, scaberulous, very slender.

Western Australia. Gardner District: Gibb River, Jan 1951, *Gardner* 9918 (PERTH); Carson Escarpment, 29 km ENE of Doongan, Mar 1978. *Lazarides* 8660 (CANB).

This species has so far only been collected from the Kimberley region of Western Australia. It has a characteristic sprawling habit. Its spikelets are similar to those of *A. schultzii* except that they lack a twisted lemma column and to those of *A. sciuroides* except that the lemma is convolute, it has no pseudo-articulation and the lower glume is 3–nerved.

Aristida latzii B. K. Simon, species nova affiis *A. nitidulae* (Henrard) S. T. Blake ex J. Black sed lemmate laevi, foliis rigidioribus et affinis *A. burraensi* B. K. Simon sed aristis complanatis, lemmate longiore differt. **Typus:** *Latz* 4136B (BRI sub BRI 238482, holotypus; isotypi AD, CANB, NT).

Caespitose perennial to 90 cm tall, with many rigid filiform leaf blades clustered together in the lower portion giving the plant a distinctive appearance. Culms scaberulous, glabrous, terete, with many branches particularly at the base, nodes concealed by the leaf sheaths which are scaberulous and glabrous. Ligule a fringe of hairs to 0·2 mm long. Leaf blades involute and stiff, ending in a rigid point, to 20 cm × 1 mm. Inflorescence a spicate panicle, 10–37 × 1 cm. Glumes smooth, 1–nerved, acuminate, the lower 6–9 mm long, the upper 7–10 mm long. Lemma 7–9 mm long, convolute, smooth to very finely scaberulous, pallid to pale mauve with scattered darker mauve patches; callus *ca* 0·4 mm long with hairs to 1·2 mm long. Awns sub-equal, 6–15 mm long, scabrous, flattened. **Fig. 2B.**

Northern Territory. CENTRAL NORTHERN: 5 miles [8 km] W of Mt Riddock Homestead, Sep 1955, *Burbidge & Gray* 4496 (CANB); 15 miles [24 km] NNW of Indiana homestead, Jan 1971, *Latz* 1129 (BRI, CANB, NT); Mt Riddoch, Sep 1973, *Latz* 4136B (AD, BRI, CANB, NT). CENTRAL SOUTHERN: Mt Benstead, Jan 1972, *Latz* 1943 (BRI, CANB, NT); Ormiston Gorge, May 1956, *Chippendale* in NT 2102 (BRI, MEL, NSW, NT, PERTH); Valley of the Eagles, 35 miles [56 km] ENE of Alice Springs, Oct 1966, *Beauglehole* 20669 (BRI, NSW, NT); Heavitree Range, Alice Springs, Mar 1971, *Latz* 1310 (NT), Jun 1971, *Nelson* 2121 (CANB); 15 km SE of Alice Springs, Jun 1976, *Craven* 4305 (CANB); Honeymoon Gap, 15 km WSW of Alice Springs, Mar 1980, *Simon* 3612 *& Latz* (AD, BRI, CANB, K, NSW, NT); Palm Valley, Aug 1956, *Chippendale* in NT 2698 (AD, BRI, NT), Jul 1965, *Beauglehole* 10355 (BRI, NSW, NT); Bloods Range, Apr 1972, *Latz* 2382 (CANB, NT).

This distinctive species with rigid culms and long rigid filiform leaf-blades clustered together is restricted to the Macdonnell and Harts Ranges of Central Australia where it occurs on rocky platforms of quartzite ridges. It is similar to, and often associated with, *A. nitidula* but that species always has tubercled lemmas and is ecologically associataed more with limestone areas of the ranges (P. Latz, pers. comm.). This species is named in honour of Mr Peter Latz, known for his prolific good collections of grasses and sedges from the Northern Territory, who gave me hospitality during my visit to Alice Springs in 1980 and showed me *A. latzii* in the field.

Aristida lazaridis B. K. Simon, species nova affinis *A. leptopodae* Benth. sed lemmatibus involutis, glumis longitudine plus aequalibus et affinis **A. boreali** B. K. Simon sed marginibus lemmatis protrusis a latere, panicula effusiore differt. **Typus:** *Lazarides* 4807 (BRI sub BRI 178996, holotypus; isotypi, AD, CANB, MEL, NSW, NT, PERTH).

Caespitose perennial to 1·4 m tall. Culm woody, terete, glaucous, branched throughout its length, to 6–noded, nodes mauve. Leaf sheaths smooth, glaucous, glabrous. Ligule a fringe of hairs to 0·3 mm long, with hairs to 1 mm at the auricles and forming a band round the collar. Leaf blades flat and flexuouse, scaberulous, more so on the lower surface, to 20 cm × 3 mm. Inflorescence a very open panicle with branches and pedicels naked for up to 8 cm, 10–45 × 5–20 cm. Glumes 9–19 mm long, the lower slightly longer than or subequal to the upper, smooth or the lower glume with a scabrous keel, acuminate to shortly awned, the lower 1–sub–3–nerved, the upper 1–nerved. Lemma 7–12 mm long, involute with one margin usually protruding laterally and giving it a convolute appearance, pallid with scattered mauve patches; callus *ca* 0·6 mm long with hairs to 2 mm long. Awns unequal, the laterals 10–31 mm long, the central 13–37 mm long, flattened at the base but terete apically, scaberulous. **Fig. 2C.**

SPECIMENS EXAMINED: 37. **Queensland.** GREGORY NORTH DISTRICT: 20 miles [32 km] NNW of Duchess, Aug 1954, *Lazarides* 4807 (AD, BRI, CANB, MEL, NSW, NT, PERTH). MITCHELL DISTRICT: Prairie, Feb 1931, *Hubbard* 7018 *& Winders* (BRI, K). BURKE DISTRICT: 20 miles [32 km] NE of Richmond, Jun 1954, *Lazarides* 4508 (AD, BRI, CANB, MEL, NT, PERTH); Galah Gorge, 25 miles [40 km] N of Hughenden, Jun 1953, *Lazarides* 3523 (AD, BRI, CANB, NSW, NT, PERTH); 7 miles [11 km] S of Mt Isa, Mar 1954, *Lazarides* 4378 (AD, BRI, CANB, MEL, NSW, NT, PERTH); Hughenden, Apr 1935, *Blake* 8457 (BRI, CANB, K, NT). NORTH KENNEDY DISTRICT: 7 miles [11 km] N of Conjuboy, Feb 1954, *Lazarides* 4195 (BRI, CANB, NT); Blue Range SW of Ingham, Jul 1954, *Blake* 19439 [BRI, CANB, K, MEL, NSW]; 10 miles [16 km] E of Nulla Nulla [*ca* 110 km WNW of Charters Towers], Jul 1954, *Lazarides* 4615 (AD, BRI, CANB, MEL, NSW, NT, PERTH); 16 km from Charters Towers on road to The Lynd, Apr 1978, *Simon* 3448 (BRI, CANB, K, MO). SOUTH KENNEDY DISTRICT: Broken River Range, Apr 1978, *Simon* 3290 (BRI, CANB, K); 13 miles [21 km] E of Pasha Station, Jul 1964, *Adams* 1077 (BRI, CANB). LEICHHARDT DISTRICT: Comet, Feb 1931, *Hubbard* 7973 (BRI, K). PORT CURTIS DISTRICT: near Stanage Bay, Apr 1945, *Blake* 15634 *& Webb* (BRI, CANB); Rockhampton, Feb 1931, *Hubbard* 8056a (BRI, K), Mar 1935, *Blake* 7812 (AD, BRI, CANB, K, MEL, NSW, NT, PERTH). BURNETT DISTRICT: Gayndah, Apr 1966, *Everist* in BRI 62753 (BRI); Brian Pastures, Mar 1952, *Blake* 18901 (BRI, CANB, MEL, NSW). DARLING DOWNS DISTRICT: In 1894, *Mohl* 10 (MEL). **Northern Territory.** DARWIN AND GULF: Cox River Station, Jan 1978, *Latz* 7254 (BRI, CANB, DNA, NSW, NT). **Western Australia.** GARDNER DISTRICT: Barnett River Gorge, Jun 1976, *Beauglehole* 52460A (CANB).

This species is fairly widespread in tropical Queensland and extends to tropical parts of this state as well as to the Northern Territory and Western Australia (one specimen each). It has been mistakenly identified as *A. calycina* var. *praealta* but a close examination of the type of that name showed it to be a different entity. *A. lazaridis* is characterised by its very open inflorescence similar to that in *A. leptopoda* Benth. but it differs from that species by the possession of involute lemmas which usually appear convolute due to a lateral protrusion of one lemma margin from the furrow and by the possession of glumes which do not differ so greatly from one another in length. Ecologically it differs from *A. leptopoda* by growing on sandy to loamy soils as opposed to cracking clays in the latter. The species is named in honour of Mr Mike Lazarides who collected the type specimen and much of the cited material and whose work on *Aristida* (Lazarides, 1980) has been a useful source of information for my own studies.

Aristida lignosa B. K. Simon, species nova affinis *A. ramosae* R.Br. sed lemmate longiore, glumis et culmis robustioribus differt. **Typus:** *Simon* 3339 (BRI sub BRI 264061 holotypus; isotypi, CANB, K).

Very robust caespitose perennial to 2 m tall with sturdy woody culms, many-branched at the nodes, with swollen bases and thick sturdy roots. Culms terete, glabrous and smooth, up to 4–noded, nodes purple, branches increasing in number (up to 10) towards the top of the culm.

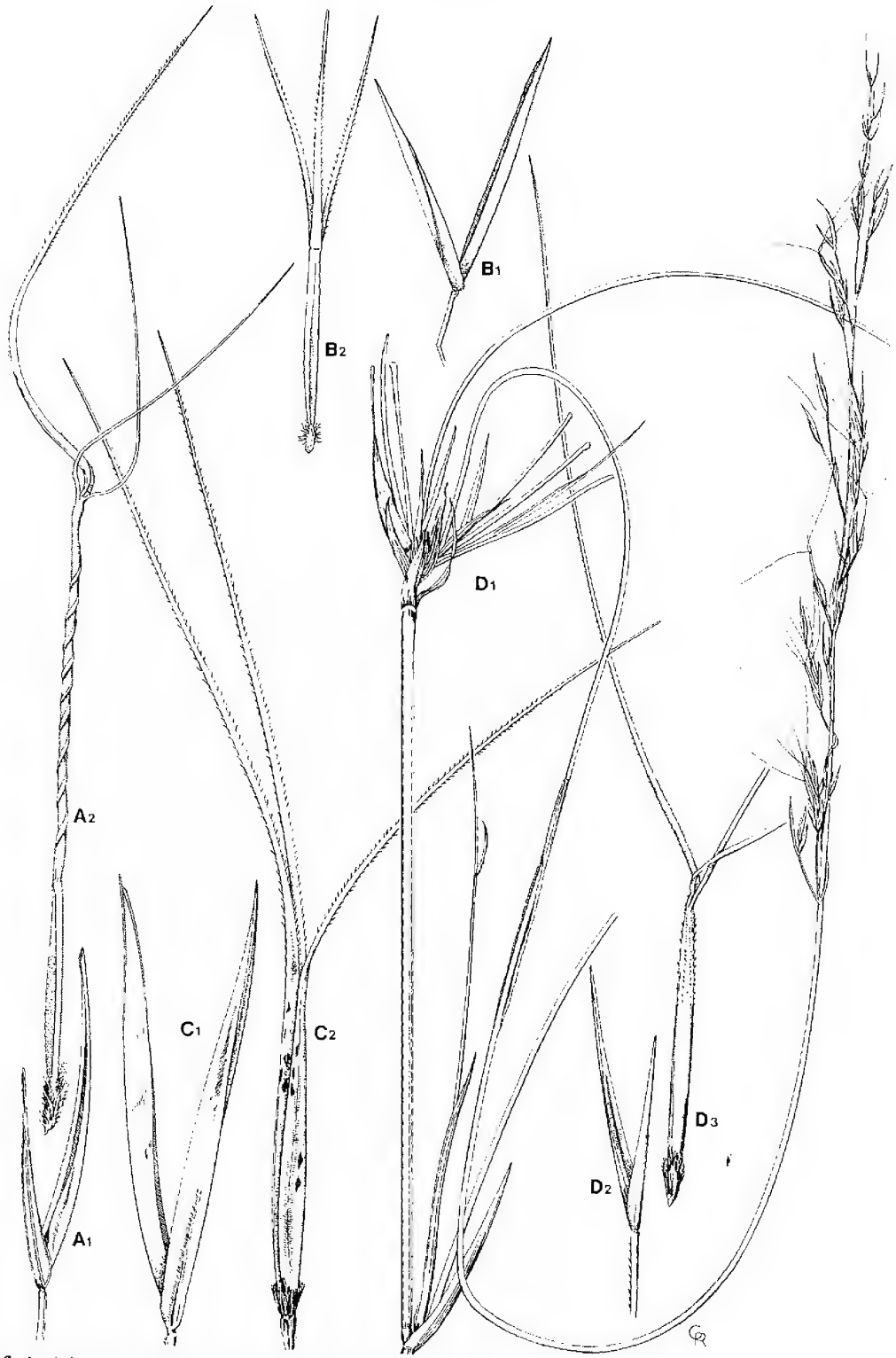

Fig. 2. A. *Aristida granitica*. A1, glumes (× 4); A2, lemma (× 4). G. *Aristida latzii*. B1, glumes (× 4); B2, lemma (× 4). C. *Aristida lazarides*. C1, glumes (× 4); lemma (× 4). D. *Aristida lignosa*. D1, apical part of culm (× ½); D2, glumes (× 4); lemma (× 4). All drawn from type specimens.

Leaf sheaths smooth and glabrous. Ligule a fringe of hairs to 0·2 mm long. Leaf blades flat or involute, stiff to flexuose, to 30 cm × 4 mm. Inflorescence a contracted to open panicle 7–30 × 0·5–5 cm. Glumes acuminate to shortly awned, 1–nerved, scaberulous, the lower 5–8 mm long, the upper 7–10 mm long. Lemma convolute, 6–11 mm long, scabrid-tuberculate over most of the surface. Callus to 1 mm long with hairs to 1·5 mm long. Awns subequal, slender, the laterals 11–20 mm long, the central 14–23 mm long. **Fig. 2D.**

SPECIMENS EXAMINED: 28. **Queensland.** MARANOA DISTRICT: Ooline, Oct 1948, *Everist* 3537 (BRI, CANB). SOUTH KENNEDY DISTRICT: Hazelwood Creek, W of Eungella Dam, Apr 1978, *Simon* 3339 (BRI, CANB, K). LEICHHARDT DISTRICT: between Lancewood and Tallwood, Sep 1978, *Anderson* 591 (BRI); Broadsound Shire, 6 km E of Langley station, Oct 1978, *Anderson* 595 (BRI); 6 km SE of Emerald, *Godwin* E511 (BRI); 8 miles [13 km] E of Comet, Sep 1961, *Lazarides & Story* 131 (BRI, CANB, NSW); 7 miles [11 km] W of Bauhinia Downs, Aug 1962, *Johnson* 2457 (BRI); 17 miles [27 km] N of Rolleston, Sep 1962, *Story & Yapp* 224 (BRI, CANB, NSW); Brigalow Research Station, NW of Theodore, Apr 1963, *Johnson* 2651 (BRI); Isla Gorge, Aug 1973, *Sharpe & Hockings* 519 (BRI); Carnarvon Range, Jun 1977, *Crips & Ellyard* 3025 (BRI, CBG). PORT CURTIS DISTRICT: Gogango, May 1956, *Blake* 19977 (BRI). BURNETT DISTRICT: Nanango, Feb 1917, *Grove* in BRI 18446 (BRI). WIDE BAY DISTRICT: Kin Kin, *Francis* in BRI 178629 (BRI). DARLING DOWNS DISTRICT: Lapunyah, Jul 1958, *Johnson* 513 (BRI, CANB). MORETON DISTRICT: Cunningham Gap, Jan 1914, *Boorman* 448 (NSW); Flinders Peak, Jun 1935, *Everist* 1179 (BRI); Mount Edwards, Apr 1934, *Everist* 581 (BRI); between Teviotville and Anthony, Nov 1930, *Hubbard* 5367 (BRI, K). **New South Wales.** NORTH COAST: Sunday Creek, Upper Macleay R., Jan 1941, *Davis* 50 (NSW). NORTHERN TABLELANDS: Acacia Creek, Jan 1910, *Dunn* NSW 144385 (NSW).

This is a tall robust woody perennial with a characteristic pattern of rigid fastigiate branching and a scabrous-tuberculate indumentum on the lemma. It is fairly widespread in central Queensland and spreads as far south as Wingham, New South Wales, occurring on a range of soils. It has been confused with *A. ramosa* R.Br.

Aristida vickeryae B. K. Simon species nova, affinis *A. ramosae* R.Br. sed glumis longioribus, lemmate breviore quam glumam superum, interdum aequans glumam inferam differt. **Typus:** *Vickery* in NSW 144387 (NSW holotypus; isotypus BRI).

Caespitose perennial to 45 cm tall. Culms smooth, glabrous, terete 2–4– noded with 2–3 branches from each node. Leaf sheaths smooth, glabrous. Ligule a fringe of hairs 0·3–0·7 mm long, with longer hairs to 2 mm long at the auricles. Leaf blades convolute, filiform, scabrous especially on the upper surface, flexuose on drying, 4–16 cm × *ca* 0·5 mm. Inflorescence an open panicle about three times longer than wide, 12–15 × 3–5 cm. Glumes smooth, cuspidate, 1–nerved, scaberulous on the keel, purplish, the lower 8–10 mm long, the upper 12–13 mm long. Lemma *ca* 10 mm long, smooth to slightly scaberulous at the apex, convolute (rarely involute), pallid; callus *ca* 1·2 mm long, with hairs 1·2 mm long. Awns 33–37 mm long, the side awns 3–4 mm shorter than the central, scaberulous, very slender. Anthers 3, *ca* 2 mm long.

New South Wales. SOUTH FAR WESTERN PLAINS: between Euston and Gol Gol, Oct 1949, *Vickery* in NSW 144387 (NSW, BRI).

This species, thus far only represented by the type, has affinities with *A. ramosa,* differing from that species by its larger glumes. Also the lemma is shorter than the upper glume whereas in *A. ramosa* it is either the same length or longer. It also appears to be close to what appear to be hybrid populations between *A. ramosa* var. *ramosa* and *A. jerichoensis* var. *jerichoensis* in New South Wales. However, as the glumes are longer than in this intermediate poplation and do not have the lemma protruding beyond them I have decided on specific rank for this taxon. Biosystematic study is required in this and other groups of Australian *Aristida* species in order to understand the operating principles of variation and at what taxonomic level this variaton should be recognised.

There are also six new infra-specific taxa of Australian *Aristida* species that require formal recognition.

Aristida benthamii Henrard var. **spinulifera** B. K. Simon, varietas nova varietate typica cum tuberculis marginibus in sulco lemmatis differt. **Typus:** *Simon* 2543 *& Andrews* (BRI sub BRI 227406 holotypus; isotypi CANB, NSW, NT).

Queensland. LEICHHARDT DISTRICT: Blackdown Tableland, Oct 1971, *Blaxell* 937 (BRI, NSW). WIDE BAY DISTRICT: Torbanlea, May 1975, *Simon* 2543 *& Andrews* (BRI, CANB, NSW, NT). MORETON DISTRICT: Between Mooloolah and Maroochydore, Apr 1916, *C. White* in QH4060 (BRI); 4·5 km NE of Tangalooma, Moreton Island, Mar 1973, *Durrington* 365 (BRI).

This variety is similar to the type variety in all respects other than the presence of tubercles in the lemma furrow. Lazarides (1980) recognised this variation within his concept of the species as a whole but I feel taxonomic recognition of the form with tubercled furrows is warranted in the same manner as the pairs var. *calycina* and var. *praealta* of *A. calycina,* and var. *jerichoensis* and var. *subspinulifera* of *A. jerichoensis.* The nature of this variation will only be understood with biosystematic study.

Aristida biglandulosa J. Black var. **laevis** B. K. Simon, varietas nova varietate typica sine tuberculis in sulco lemmatis differt. **Typus:** *Latz* 3164 (BRI sub BRI 143854 holotypus; isotypi AD, NSW, NT, PERTH). **Fig. 3C.**

Northern Territory. CENTRAL NORTHERN: Mount Riddock Station, Aug 1972, *Latz* 3164 (AD, BRI, NSW, NT, PERTH). CENTRAL SOUTHERN: Aug 1956, *Cleland* in AD 966060360 (AD). **Queensland.** BURKE DISTRICT: Spring Creek, 26 km N of Mt Isa, Jun 1977, *Schmid* 217 (BRI). WARREGO DISTRICT: Charleville, Jul 1970, *Rowen* P1 (BRI).

This variety is similar to the type variety as described by Black (1933) in all respects except for the absence of tubercles in the furrow of the lemma. Lazarides (1980) included material with smooth furrows within his species concept of *A. biglandulosa* but I feel this variant is worthy of formal recognition in the same way as similar variants of *A. calycina, A. benthamii* and *A. jerichoensis.* It has been collected from a few localities in arid parts of the Northern Territory and Queensland, all geographically remote from each other.

Aristida browniana Henrard var. **latifolia** B. K. Simon, varietas nova varietate typica foliis latioribus multis differt. **Typus:** *Latz* 2811 (BRI sub BRI 238486, holotypus; isotypi CANB, DNA, NT). **Fig. 3A.**

Northern Territory. DARWIN AND GULF: Howard Springs Forest Reserve, Apr 1965, *Stocker* in NT 11842 (DNA, NT); Goyder River Crossing, Jun 1972, *Latz* 2811 (BRI, CANB, DNA, NT). VICTORIA RIVER: 63 miles [101 km] ESE of Carlton River Station (W.A.), Jul 1955, *Lazarides* 2994 (AD, BRI, CANB). **Western Australia.** DAMPIER DISTRICT: Edgar Ranges, Aug 1976, *Kenneally* 5747 (CANB, PERTH); Anna Plains Station, Jul 1941, *Burbidge* 1397 (PERTH).

This variety with its wide flattened leaf-blades (2–4 mm wide) which curl up at maturity is so strikingly different from the typical form of *Aristida browniana* with narrow involute leaf-blades (0·5–1 mm wide) that it warrants formal recognition. Thus far it has been found in a few localities in tropical Northern Territory and tropical Western Australia.

Aristida calycina R.Br. var. **filifolia** B. K. Simon, varietas nova varietate typica foliis exorientibus e basi maximam partem, laminis filiformibus rigidis convolutis differt. **Typus:** *Lazarides* 4683 (CANB sub CANB 283116 et CANB 283117, holotypus).

Queensland. COOK DISTRICT: Newcastle Range, 15 miles [24 km] SSE of Einasleigh, Jul 1954, *Lazarides* 4683 (CANB).

This variety is characterised by its rigid, filiform convolute leaves which are borne mostly from the base of the plant. It is so different vegetatively from what one normally encounters in this species that recognition at the rank of variety seems appropriate. Unfortunately there is not much fertile material in the type specimen, the only collection to date.

Aristida utilis Bailey var. **grandiflora** B. K. Simon, varietas nova varietate typica lemmatibus, glumis et aristis longioribus differt. **Typus:** *Morton* 1653 (BRI sub BRI 285806, holotypus).

Queensland. COOK DISTRICT: Andoom, Apr 1982, *Morton* 1653 (BRI).

This variety is similar in most respects to the type variety other than all the spikelet components are at least 25 percent larger. The whole plant is also much more robust and the leaf blades noticeably wider. Thus far it is only represented by the type.

Aristida macroclada Henrard subsp. **queenslandica** B. K. Simon, subspecies nova subspecie typica columna lemmatis spiris multis differt. **Typus:** *S. T. Blake* 21741 (BRI sub BRI 065923 holotypus; isotypi BRI sub BRI 207306, CANB, MEL, NSW). **Fig. 3B.**

Queensland. COOK DISTRICT: Iron Range, Apr 1944, *Flecker* in *N.Q. Nat. Club* 8529 (BRI, NSW, QRS); Daintree River, Mar 1932, *Brass* 2318 (BRI); Stoney Creek Falls near Cairns, May 1962, *Blake* 21741 (BRI, CANB, MEL, NSW); Pine Creek near Cairns, Aug 1962, *Blake* 12410 (BRI); Cowley Beach, Jun 1976, *Tracey* in BRI 238957 (BRI). NORTH KENNEDY DISTRICT: 10 miles [16 km] S of Tully, Apr 1945, *Blake* 15803 & *Webb* (BRI, CANB, MEL, NSW); Hinchinbrook Island, NE slopes of Mt Diamantina, Aug 1951, *Blake* 18844 (BRI); Hinchinbrook Is., Little Ramsay Bay, Aug 1975, *Sharpe* 1709 (BRI); Mt Spec, Mar 1933, *C. White* 8917 (BRI); Little Crystal Creek National Park, May 1975, *Simon* 2626 & *Andrews* (BRI, CANB, K, L, NT); Homestead, Jun 1934, *Blake* 6025 (BRI, CANB, K, L).

Lazarides (1980), after his description of *A. macroclada* in which he referred to the lemma column "of 1–many spirals", mentioned the lemma columns in the Northern Territory plants to "have poorly developed columns of 1 or 2 spirals." This statement contrasts with the observations of Blake (1969) who referred to a "well developed column." Examination of the type of *A. macroclada,* which came from the Northern Territory, revealed this specimen also has a poorly developed lemma column with 1–2 spirals, so I have recognised the residual Queensland material with a well developed column as taxonomically distinct. As the two entities differ only by the degree of development of the column and are allopatric (one in north Queensland and the other in the north of the Northern Territory, a recently collected specimen from the west coast of Cape York and in New Guinea) the subspecific rank has been chosen for their formal recognition.

Other nomenclatural changes in *Aristida* include the placing of four taxa previously recognised as species at varietal rank resulting in one new combination and three new synonyms.

Aristida queenslandica Henrard var. **dissimilis** (S. T. Blake) B. K. Simon, comb. et stat. nov.

Aristida dissimilis S. T. Blake, Proc. Roy. Soc. Qld 51:170, t.4, figs 4–7 (1940).

The only character distinguishing this taxon from *A. queenslandica* var. *queenslandica* is the glabrous lower culm. The other distinguishing features mentioned by Lazarides (1980) do not hold from the range of specimens I have studied and I therefore consider varietal rank the best one for the taxonomic recognition of these entities.

Aristida calycina R.Br. var. **praealta** Domin, Biblioth. Bot. 85:345 (1915).

A praealta (Domin) Henrard, Meded. Rijks Herb. 54:72 (1926).

A. armata Henrard, Meded. Rijks Herb. 58A:1975, t. 87, (1932), *op. cit.* 55C:703 (1933), synon. nov.

When studying material previously placed under *A. praealta* I noticed that the lemma of the type specimen of this name has a tubercled furrow exactly as in the lemma of the species previously called *A. armata.* The bulk of the remainder of the material was a new species (named *A. lazaridis* in this paper). The only critical difference between *A. armata* and *A. calycina* is the tuberculate *vs.* non-tuberculate lemma furrow and I have decided it best to represent this variant at varietal rank, where is was originally placed by Domin.

Aristida ramosa R.Br. var. **scaberula** Henrard, Meded. Rijks Herb. 58A:260 (1932), *op. cit.* 54C:736 (1933).

Aristida echinata Henrard, Meded. Rijks Herb. 58A:285, t. 139 (1932), *op. cit.* 54C:713 (1933), synon. nov.

Aristida ramosa R.Br. var. **speciosa** Henrard, Meded. Rijks Herb. 58A:260 (1932), *op. cit.* 54C:737 (1933).

Aristida personata Henrard, Meded. Rijks Herb. 58A:290, t. 141 (1932), *op. cit.* 54C:731 (1933), synon. nov.

Examination of the types of *A. echinata* and *A. personata* revealed them to be the same taxa as *A. ramosa* var. *scaberula* and *A. ramosa* var. *speciosa* respectively. Furthermore, I am of the opinion that the variation between what are, in this paper, recognised as three varieties of *A. ramosa* are not great enough to regard them as species. However, only more detailed biosystematic studies will reveal the true nature of the differences between these and closely related taxa.

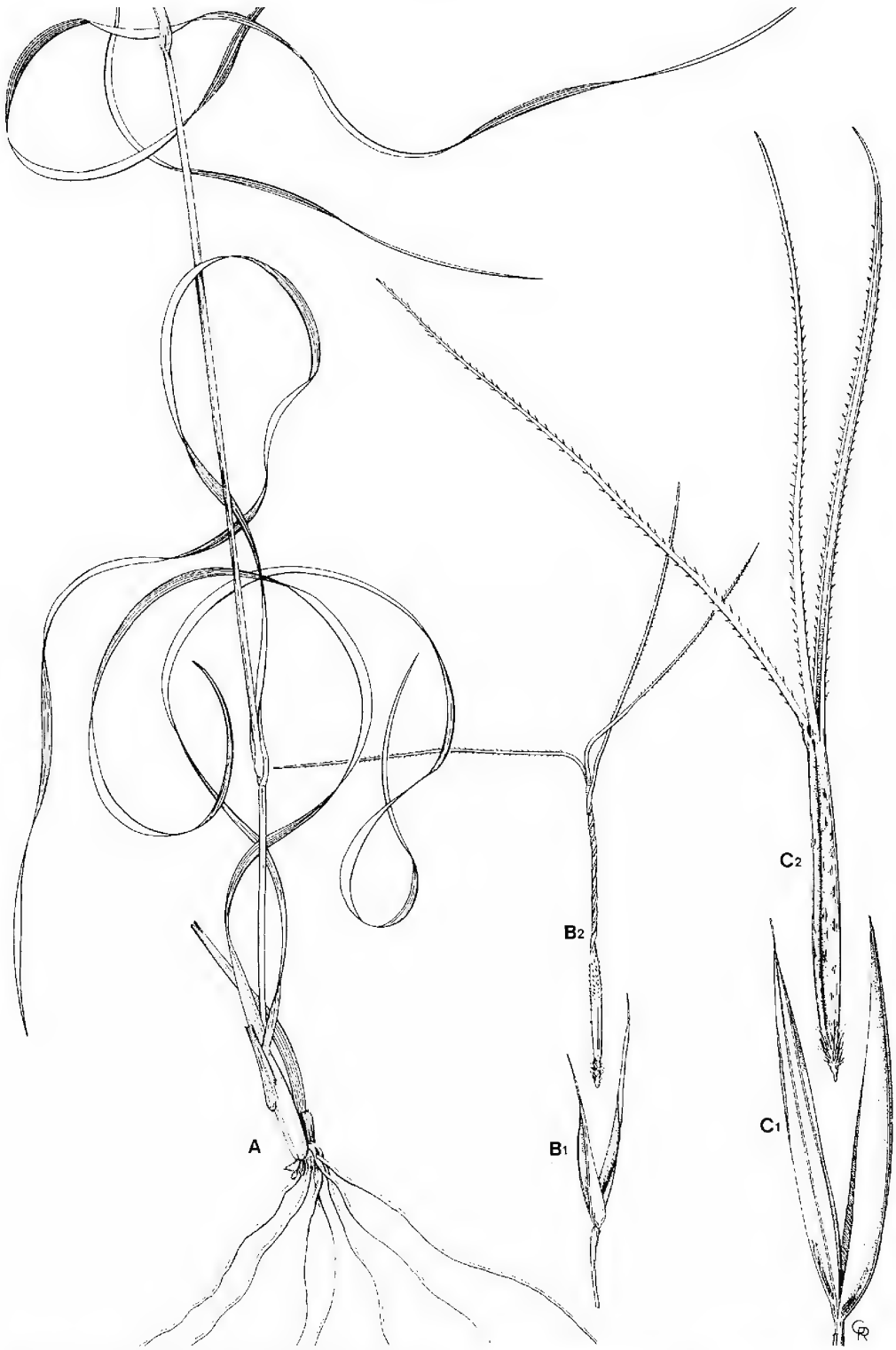

Fig. 3. A. *Aristida browniana* var. *latifolia*, base of culm showing broad wavy leaf-blades. B. *Aristida macroclada* subsp. *queenslandica*. B1, glumes (× 4); lemma (× 4). C. *Aristida biglandulosa* var. *laevis*. C1, glumes (× 4); C2, lemma (× 4). All drawn from type specimens.

A KEY TO ARISTIDA IN AUSTRALIA

The key has been developed and tested for a few years and the one given here represents the latest version of a number of manuscript versions which have preceded it. Furthermore, it will undoubtedly undergo further modification as the revision progresses. The reason for including it at this stage is that the new taxa circumscribed in this paper may be identified and compared with all Australian taxa currently recognised.

1. Lateral awns less than ⅓ as long as the median awn or absent ..... (section *Streptachne)* 2
   Lateral awns as long as the median awn or more than ⅓ its length 4

2. Lower internodes glabrous, leaf-blades setaceous QD, NSW ..... **A. spuria** Domin
   Lower internodes hairy; leaf-blades flat 3

3. Lemma to 12 mm long; glumes to 12 mm long NT, QD ..... **A. utilis** Bailey var. **utilis**
   Lemma more than 17 mm long; glumes more than 15 mm long QD .....
   A. utilis Bailey var. **grandiflora** B. K. Simon

4. Lemma with an articulation ..... (section *Arthratherum*) 5
   Lemma without an articulation ..... (section *Aristida*) 13

5. Glumes inverse WA, NT, QD ..... **A. polyclados** Domin
   Glumes normal (not inverse) 6

6. Awns dissimilar, the median thick and usually recurved, the laterals slender, usually erect and up to 2 cm shorter 7
   Awns ± similar, erect, the laterals as long as the median or shorter by 2–5 mm 9

7. Lateral awns much thinner than the central and about half the length QD .....
   A. granitica B. K. Simon
   Lateral awns slightly thinner than the central and more than half the length 8

8. Annual 33–50 cm tall; lemma 5–7·5 mm long WA, NT, QD ..... **A. hirta** Domin
   Perennial 60–120 cm tall; lemma 8–12·5 mm long NT, QD .... **A. superpendens** Domin

9. Articulation indistinct; lateral arms shorter than the median by 2–5 mm
   WA, NT, QD ..... **A. holathera** Domin
   Articulation distinct; lateral awns as long as the median 10

10. Column 5·8–8 cm long, *ca* 1 mm thick WA, NT, QD ..... **A. hygrometrica** R.Br.
    Column usually less than 5 cm long, occasionally longer (–6·5 cm) but then thinner (to 0·3 mm thick) 11

11. Culms ± wavy; lemma (including the callus) 5–7 mm long, brownish when mature
    All Mainland States ..... **A. contorta** F. Muell
    Culms ± straight; lemma (including the callus) 7–10 m long, purplish when mature 12

12. Leaf-blades to 1 mm wide, involute All Mainland States .....
    A. browniana Henrard var. **browniana**
    Leaf-blades over 2 mm wide, flattened WA, NT .....
    A. browniana Henrard var. **latifolia** B. K. Simon

13. Lemma involute, with a furrow on the ventral surface 14
    Lemma convolute, without a furrow on the ventral surface 40

14. Column present WA, NT, QD ..... **A. perniciosa** Domin
    Column absent 15

15. Awns unequal in length, laterals ⅓–⅔ as long as the median 16
    Awns ± equal in length, or the laterals more than ⅔ as long as the median 17

16. Culm internodes hirsute, especially at the base NT, QD ..... **A. queenslandica** Henrard var. **queenslandica**
Culm internodes glabrous QD ..... **A. queenslandica** Henrard var. **dissimilis** (S. T. Blake) B. K. Simon

17. Margins of the lemma furrow with one to several rows of tubercles 18
Margins of the lemma furrow smooth or the lemma muricate towards the apex 25

18. Glumes inverse 19
Glumes subequal or normal (upper longer than the lower) 23

19. Glumes differing in length by more than 3 mm 20
Glumes differing in length by less than 3 mm 21

20. Lemma with a pseudo-articulation; leaf-blades curling up at maturity WA, NT, SA, QD ..... **A. inaequiglumis** Domin
Lemma without a pseudo-articulation; leaf-blades striaght or flexuous WA, NT, QD ..... **A. pruinosa** Domin

21. Inflorescence with pulvini; glumes ±smooth, (8–)10–14 mm long; lemma 8–12 mm long WA, NT, SA, QD, NSW ..... **A. calycina** R.Br. var. **praealta** Domin
Inflorescence without pulvini; glumes ±scaberulous, 5–9(–12) mm long; lemma 5·5–9 mm long 22

22. Inflorescence branches naked at base; lateral awns shorter than the median by more than 2 mm QD ..... **A. benthamii** Henrard var. **spinulifera** B. K. Simon
Inflorescence branches bearing spikelets at base; lateral awns shorter than the median by 1–2 mm NT, QD, NSW ..... **A. jerichoensis** (Domin) Henrard var. **subspinulifera** Henrard

23. Lemma 10–12 mm long NT, SA, QD ..... **A. biglandulosa** J. M. Black var. **biglandulosa**
Lemma up to 9 mm long 24

24. Lemma 6–9 mm long, subequal to the glumes, without a pseudo-articulation NT, QD, NSW ..... **A. jerichoensis** (Domin) Henrard var. **subspinulifera** Henrard
Lemma 4–5·5mm long, much shorter than the glumes, with a pseudo-articulation QD ..... **A. helicophylla** S. T. Blake

25. Lemma with a pseudo-articulation 26
Lemma without a pseudo-articulation 28

26. Glumes differing in length by more than 3 mm WA, NT, SA, QD ..... **A. inaequiglumis** Domin
Glumes differing in length by less than 3 mm 27

27. Glumes more than 11·5 mm long; lemma more than 8 mm long; leaf-blades convolute to flat, not curling up QD ..... **A. sciuroides** Domin
Glumes less than 11·5 mm long; lemma less than 8 mm long; leaf-blades flat and curling up WA, NT, QD ..... **A. ingrata** Domin

28. Lemma muricate towards the apex 29
Lemma smooth 31

29. Annual or short-lived perennial usually under 30 cm tall; inflorescence a densely congested spike WA, NT, SA, QD, NSW ..... **A. anthoxanthoides** (Domin) Henrard
Perennials over 50 cm tall; inflorescence a loosely arranged spike 30

30. Culms fastigiately branched WA, NT, QD ..... **A. exserta** S. T. Blake
Culms, if branched, not fastigiate QD, NSW ..... **A. muricata** Henrard

31. Lemma margin distinctly protruding laterally from the ventral furrow WA, NT, QD ..... **A. lazaridis** B. K. Simon
Lemma margin not protruding or if so, not distinctly 32

32. Glumes more than 13 mm long 33
Glumes less than 12 mm long 34

33. Lower glume 3–nerved QD ..... **A. borealis** B. K. Simon
Lower glume 1–nerved NT, QD ..... **A. biglandulosa** J. Black var. **laevis** B. K. Simon

34. Lateral awns shorter than the median by 1–2 mm 35
Lateral awns shorter than the median by more than 2 mm 36

35. Lemma ± enclosed within the glumes QD, NSW, ... **A. jerichoensis** (Domin) Henrard var. **jerichoensis**
Lemma ± protruding beyond the glumes NSW ..... **A. jerichoensis** var. **jerichoensis** × **A. ramosa** var. **ramosa**

36. Lemma 3·5–5·5 mm long QD, NSW ..... **A benthamii** Henrard var. **benthamii**
Lemma more than 6 mm long 37

37. Lower glume 3–nerved QD ..... **A. borealis** B. K. Simon
Lower glume 1–nerved 38

38. Glumes acuminate to awned; inflorescence branches naked in ± the lower half; hilum about a quarter to a sixth as long as the grain QD, NSW .. **A. acuta** S. T. Blake
Glumes acute to obtuse; inflorescence branches bearing spikelets from or from near the base; hilum *ca* half as long as the grain 39

39. Leaf-blades filiform and arranged basally on the culm QD ..... **A. calycina** R.Br. var. **filifolia** B. K. Simon
Leaf-blades not as above WA, NT, QD, NSW, VIC ..... **A. calycina** R.Br. var. **calycina**

40. Lemma with a twisted column (sometimes reduced to a half spiral) 41
Lemma without a column 47

41. Lower glume 3–7–nerved 42
Lower glume 1 -nerved 43

42. Awns similar NT, QD ..... **A. schultzii** Mez
Awns dissimilar, the central thicker and recurved at maturity QD, NSW ..... **A. warburgii** Mez

43. Glumes differing in length by up to 2 mm WA, NT, SA, QD, NSW ..... **A. latifolia** Domin
Glumes differing in length by 3–4 mm 44

44. Inflorescence loose to open with the branches naked at the base 45
Inflorescence ± spike-like with the branches bearing spikelets from the base 46

45. Column of many spirals QD, ... **A. macroclada** Henrard subsp. **queenslandica** B. K. Simon
Column of half to one spiral NT, QD ..... **A. macroclada** Henrard subsp. **macroclada**

46. Column of at least one complete spiral; lemma scabrous on the margin apically QD, NSW ..... **A. psammophila** Henrard
Column of a half spiral; lemma scarbrous all over apically NT, QD ..... **A. longicollis** (Domin) Henrard

47. Spikelet (excluding awns) up to 3 mm long QD ..... **A. cumingiana** Trin. & Rupr.
Spikelet (excluding awns) more than 5 mm long 48

48. Lemma extended beyond both glumes 49
Lemma not extended beyond both glumes 58

49. Lower glume ± 4 mm long; upper glume less than 7 mm long 50
Lower glume more than 5 mm long; uper glume more than 7 mm long 51

50. Inflorescence 3–7 × 1–4 cm, ovate in outline QD, NSW ..... **A. caput-medusae** Domin
Inflorescence larger, irregular in outline QD, NSW ..... **A. vagans** Cav.

51. Culms bushy with many fine branches QD, NSW ..... **A. gracilipes** Henrard
Culms not bushy; if much branched then robust, otherwise slender with few branches 52

52. Glumes acute to shortly aristulate 53
Glumes prominently aristulate 56

53. Inflorescence loose to open SA, QD, NSW ..... **A. ramosa** R.Br. var. **speciosa** Henrard
Inflorescence ± contracted or with ± contracted branches 54

54. Lemma slightly tuberculate NSW .... **A. ramosa** var. **ramosa** × **A. ramosa** var. **scaberula**
Lemma smooth 55

55. Lemma ± twice the length of the glumes NSW ..... **A. ramosa** var. **ramosa** × **A. vagans**
Lemma slightly longer than the glumes WA, QD, NSW, VIC .....
A. ramosa R.Br. var. **ramosa**

56. Lemma scabrid-tuberculate; culms very robust QD, NSW ..... **A. lignosa** B. K. Simon
Lemma scabrous only on the margin apically; culms slender to robust 57

57. Culms 25–45 cm tall with the inflorescence 5–8 cm long QD, NSW .....
A. leichhardtiana Domin
Culms 60–120 cm tall with the inflorescence 10–30 cm long SA, QD NSW .....
A. ramosa R.Br. var. **speciosa** Henrard

58. Lower glume longer than the upper glume, 3–nerved WA .....
A. kimberley ensis B. K. Simon
Lower glume shorter than the upper glume 59

59. Lemma shorter than or subequal in length to the upper glume 60
Lemma shorter than or subequal in length to the lower glume 69

60. Upper glume more than 12 mm long 61
Upper glume less than 12 mm long 64

61. Inflorescence longer than wide NSW ..... **A. vickeryae** B. K. Simon
Inflorescence ± as wide as long 62

62. Inflorescence 14–25 cm long and almost as wide; spikelets terminal on inflorescence branches QD, NSW ..... **A. leptopoda** Benth.
Inflorescence 6–12 cm long and wide; spikelets evenly distributed in the inflorescence 63

63. Peduncle terete; lemma ± smooth NT, SA, NSW, VIC ..... **A. behriana** F. Muell.
Peduncle compressed; lemma densely scabrous WA, NT, SA, QD, NSW .....
A. obscura Henrard

64. Lemma tuberculate apically QD, NSW ..... **A. ramosa** R.Br. var. **scaberula** Henrard
Lemma smooth or scabrous to some degree apically 65

65. Lemma scaberulous apically NT, QD ..... **A. longicollis** (Domin) Henrard
Lemma smooth or marginally scabrous apically 66

66. Glume tips acute to shortly aristulate 67
Glume tips prominently aristulate 68

67. Inflorescence ± contracted or with ± contracted branches WA, SA, QD, NSW, VIC ..... **A. ramosa** R.Br. var. **ramosa**
Inflorescence loose to open SA, QD, NSW ..... **A. ramosa** R. Br. var. **speciosa** Henrard

68. Culms 25–45 cm tall with the inflorescence 5–8 cm long QD, NSW ..... **A. leichhardtiana** Domin
Culms 60–120 cm tall with the inflorescence 10–30 cm long SA, QD, NSW ..... **A. ramosa** R.Br. var. **speciosa** Henrard

69. Lemma smooth or minutely scaberulous or scabrous only along the margin 70
Lemma tuberculate to distinctly scabrous all over apically 74

70. Inflorescence loose and open; annual QD ..... **A. annua** B. K. Simon
Inflorescence spicate; perennials 71

71. Lemma smooth with a marginal band of spines WA ..... **A. burbidgeae** B. K. Simon
Lemma smooth all over or minutely scaberulous 72

72. Glumes unequal; leaves flat to convolute, not rigid SA ..... **A. australis** B. K. Simon
Glumes ± equal; leaves filiform and rigid 73

73. Lemma 7–9 mm long with flattened awns NT ..... **A. latzii** B. K. Simon
Lemma *ca* 6 mm long with slender awns QD ..... **A. burraensis** B. K. Simon

74. Inflorescence loose and open QD, NSW ..... **A. blakei** B. K. Simon
Inflorescence congested to spicate 75

75. Lemma tuberculate 76
Lemma distinctly scabrous 78

76. Lemma up to 6·5 mm long; blades flat and curly QD, NSW .. **A. platychaeta** S. T. Blake
Lemma usually more than 6·5 mm long; blades filiform or conduplicate or if flat, not curly 77

77. Glumes ± equal WA, NT, SA, QD, NSW ..... **A. nitidula** (Henrard) S. T. Blake ex J. Black
Glumes unequal NT, SA ..... **A. arida** B. K. Simon

78. Lemma 8·5–12 mm long; leaf blades conduplicate or flat WA, NT, SA, QD, NSW ..... **A. strigosa** (Henrard) S. T. Blake ex J. M. Black
Lemma 5–8 mm long; leaf blades filiform WA, NT, SA ..... **A. capillifolia** Henrard

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